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ABSTRACT

This study was undertaken to identify facilitators barriers to effective linkages of secondary education and other training programs with registered apprenticeship programs. Analysis was conducted through case studies and surveys of programs that were identified nationally. U.S. apprenticeship programs had the following weaknesses: variable quality of training offered, inadequacies in administration of apprenticeship, inadequate numbers of skilled workers trained, lack of cost-effectiveness, inadequate financing, limited access, and unclear roles and relationships to other training. Barriers to linkages of apprenticeship programs to secondary school programs included the following: budgeting problems for business; organizational problems; company operating procedures; legal semantics and interpersonal problems among vocational education, local and state governments, and the firm or business; program preparation and implementation inertia; program length; selection of apprentices; and quality of instruction. Facilitators to linkages included the following: a common basis for exchange, such as an occupational craft committee; mutual benefits for both the school and the business or industry; mutual awareness of program goals and expectations; mutual respect, confidence, and trust of all parties concerned; access to facilities, students, instructors, and funding; planned and structured communication throughout the program; and key people on both sides dedicated to the program's success. (CML)

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Apprenticeship Linkages to Secondary Education and Other Training Programs

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Apprenticeship Linkages to Secondary Education and Other Training Programs

Educational administrators are becoming increasingly aware of the need to join forces with business and industry in order to ensure that students are prepared to enter the world of work upon graduation from secondary schools and other training programs. One means to achieve this goal is through the development of apprenticeship programs in cooperation with business and industry. An identification and evaluation of successful education and training programs linking job training opportunities with underprivileged youth and dislocated worker populations and programs, other targeted minority employment and training programs, and general high school and vocational education programs to apprenticeships is a vital undertaking that will have significant impact on the quality of our educational delivery systems, and thus, on labor and economic policy and on the ability to meet the demand for higher quality and quantity of skilled labor in the next 15 years.

Presentation Objective

This paper reports on a part of a larger study investigating organizational arrangements for successfully linking apprenticeship training to public education and training programs. Apprenticeship programs are generally delivered through the cooperative arrangements of participating employers and local educational delivery systems such as community colleges, vocational-technical

institutes, and public school systems. In many cases these programs are supported, in-part, by federal funding. This paper reports on several interorganizational arrangements that are known to successfully link apprenticeship training to job training programs, some serving special needs populations, including high school at-risk youth, displaced workers, correctional populations, special education students, as well as general vocational education trainees. Often this training is supported through special funding such as the Job Training Partnership Act (P.L. 97-300), Perkins Vocational Act, Job Corps and Targeted Jobs Tax Credits. Through this discussion, an identification of these organizational arrangements will be made and of pertinent linkage issues and barriers. Recommendations for possible program development or replication nationwide will also be made.

Background

Apprenticeship is a form of formal training in America which dates back to colonial days. Yet, it remains one of the most vital forms of training for today's workers especially in high-technology service-oriented industries. In Colonial America apprenticeship developed as a private institution. It remains so today, a fact that highlights its commercial acceptance as a viable training tool. Three major challenges that will continue to have a significant impact on education and training in the United States towards the next century parallel those cited in the Workforce 2000

study (Johnson & Packer, 1987)[1], and relate to the structure of the American economy, technology, and the demographics of the American workforce (including an aging workforce, increased proportions of minorities, and increases in women choosing careers).

Apprenticeship is recognized as an effective method to meet these challenges. The key to effective apprenticeship program development and administration is organizational coordination and linkage. Linkage has been generally defined as "any arrangement between organizations that requires mutual coordination and an exchange of resources and activities" (Banathy, et al, 1978).[2] Coordination, in turn, leads to unified and concerted action toward a common purpose (Starr, et al, 1980).[3] The purpose of coordination and linkage of secondary education programs, including vocational education, to registered apprenticeships, is to provide assistance in transition of school to work. Therefore, to achieve this goal, changes in policy and attitudes on the part of secondary education, business and industry, and other cognizant players must happen. This change should include a broad recognition of the potential labor force demographics, the public policy initiatives including

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[1]. William B. Johnson, and Packer, Arnold H. Workforce 2000: Work and workers for the 21st Century, (Indianapolis, Indiana: Hudson Institute, June, 1987).

[2]. Benjamin Banathy, Haveman, J.E., Madsen, M., & Oakley, G. A model, case study, and implementation guide for the linkage of vocational education programs in public post-secondary institutions and business, industry, and labor: A monograph. (San Francisco, CA: Far West Laboratory for Educational Research and Development, 1978).

[3]. Harold Starr, Maurice, C., Merz, H., & Zahniser, G. Coordination in vocational education planning -- barriers and facilitators. (Colombus, OH: National Center for Research in Vocational Education, 1980).

funding assistance to business and industry to partake of these special segments of the potential labor force, and the various organizational arrangements which can work to promote apprenticeships and a trained workforce. Hence, all players, business and industry, organized labor, state and local government, colleges and schools, employment and training departments -- must recognize each others' contributions to the big picture, and collaborate to maximize human potential. Ideally this is the scenario which should work. Through a review and analysis of successfully operating programs demonstrating effective organizational coordination efforts, an identification of the barriers and facilitators to such linkage and an understanding of how to implement necessary change will happen.[4]

Apprenticeship and Vocational Education

The American apprenticeship as an institution has remained isolated from the other formal educational institutions (such as public-sector secondary and vocational education) for several reasons. In a study of barriers and facilitators to apprenticeship program linkages, Thomas (1982)[5] identified instances of corporate resistance, partly due to failures in secondary vocational education, and partly to the secondary education's misunderstanding of apprenticeship. Despite this skepticism on the part of American

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[4]. Jeffrey A. Cantor. "An effective methodology for evaluation of change in vocational education," Journal of Vocational Education Research, IX, (3), 1984, 1-13.

[5]. Hollie B. Thomas. Linkage between vocationally trained participants and industry registered apprenticeship programs: A study of barriers and facilitators, Final Report, (Tallahassee FL: 1983).

business, meaningful public-sector classroom-related training services have been and are being provided to apprentices. This fact provides evidence of the potential for meaningful relationships, given appropriate policy incentives.[6,7,8]

The current debate over the re-authorization of the Carl Perkins Vocational Education Act provides an opportunity for proponents of vocational education to emphasize the need for a linkage of American industry and public sector training. Recognizing the need for U.S. workers to upgrade skills in order for our nation to compete internationally, various redesigns of the Perkins legislation are proposed, including linkage to local economic development, and job training strategies including promotion of apprenticeship.[9]

Apprenticeship sponsors agree that vocational education and apprenticeships can work together. Vocational education does help to channel well-prepared candidates into registered apprenticeships. Vocational education often provides related-

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[6]. Jeffrey A. Cantor. The job training partnership act and the maritime shipbuilding industry: A model program. Personnel Journal, June, 1986, 118-125.

[7]. Jeffrey A. Cantor. JTPA supports the shipbuilding industry. Journal of Studies in Technical Careers, VII, (3), 1985, 205-213.

[8]. Jeffrey A. Cantor. Multi-shipyard cooperative training: A report on the state-of-the-art. Journal of Ship Production, I, (3), 1985, 184-191.

[9]. Regan Walker. "Higher Vocational Goals Eyed by Administration," Education Week, March 29, 1989, 15.

instruction portions of the apprenticeship.[10] To be successful in establishing linkages, workable arrangements for arbitration between vocational education and apprenticeship need to be developed in a mutually beneficial manner. The key might well be identifying appropriate occupational training categories and identifying qualified and well-prepared applicants. This might also involve pre-apprenticeship preparation for those students needing remediation in basic education.

Related instruction, both classroom and laboratory, as provided by public vocational education has always been viewed by both industry and public policy makers as beneficial.[11] A significant portion of related instruction in apprenticeship is conducted in public vocational education facilities. Even where private industry facilities are used, part of the instructor's salary is often funded by vocational education monies from state, federal and local sources. The Smith-Hughes (1917) and George-Barden (1946) Vocational Education Acts provided for partial reimbursement from federal funds of instructor salaries in states with approved vocational plans.

The Perkins Vocational Education Act currently provides funding for some apprenticeship training. The degree to which this funding is used and the processes used for such linkage vary from

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[10]. Harford Community College. "The Maryland Association of Electrical Contractors Apprenticeship Joins with HCC's Programs," Harford Gazette, April, 1982.

[11]. Frank H. Cassel and Associates Inc. Study in Vocational Education involvement with apprenticeship programs in Illinois, executive summary, (Chicago, IL: Frank Cassel and Associates, June 1976), 1025.

state to state. Perkins' monies are used to fund programs in both secondary schools and community colleges. The literature is rich with examples of apprenticeship-related instruction being provided through community college linkages and Perkins' funding. Yet, secondary education continues to experience problems and barriers to effective registered apprenticeship participation with business and industry. A review of how this is done and the problems and barriers to the use of Perkins' funding was made in conjunction with those on-site school-apprenticeship program reviews.

Method

Programs involving linkages of apprenticeships to secondary education and other training programs were analyzed through case studies and surveys of programs which were identified nationally. The case study method provided a useful device for systematically identifying and reviewing factors influencing successful linkages, introducing useful new data and perspectives, and providing a structure for the development of policy recommendations. The concept of a "case" enabled the definition of the boundaries of an investigation beyond those associated with a single data set or organization. The case method allowed the phenomenon of inter-organizational collaboration (for achieving linkage) to be studied in context, thereby highlighting the actions and interactions that result in the observed effect(s) (Yin, 1989)[12]. Theoretical models

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[12]. R. K. Yin (1989). Case study research: Design and method. Beverly Hills, CA: Sage Publications.

were developed based on rationale supporting each apprenticeship program's successful operation (including the roles of the participating people, and organizations and any individuals operating at both state and local DOL-SACs levels). The models covered the following types of issues: (a) the context (setting) or need within which a linkage activity is initiated; (b) the array of organizations involved in the linkage activity, including their roles, compatibility, and conflicts; and (c) the goals of the firm or industry association. The case reviews included special populations involving school to apprenticeships, vocational education, job corps, JTPA linkages, dislocated worker assistance, community colleges, correctional institutions, and state and local governments.

A Conceptual Framework for Linkage

Apprenticeship as a training tool is used by business and industry, labor organizations, professional associations and secondary education, vocational education and public agencies. An understanding of the rationale for this participation and the expressed concerns and potential barriers to participation and program success is necessary in order to promote apprenticeship as a training tool for wider use, and to design processes to alleviate or eliminate barriers.

Business and Industry Participation

Employers who sponsor apprentices do so for specific purposes. Employers in industrial firms often express interest in

apprenticeship training when work requires craftsmen in identifiable and recognized classifications. For instance, high-wage craftsmen, such as those in automotive manufacturing, seem more willing to stay with an employer than low-wage, semi-skilled workers.[13] Employers also find it highly desirable to operate in-house training, and the apprenticeship arrangement becomes both cost-attractive and efficient for a corporate environment. General Dynamics Corporation and Newport News Shipbuilding have found the apprenticeship a desirable mechanism for training in a variety of technical fields, and for providing a cadre of trained professionals from which to continue a wider range of human resource development initiatives aimed at preparing the firm's leaders for the next generation. Recruitment into the prestigious apprenticeship training program is made from the ranks of the firms' existing personnel, after a period of employment during which the firms become acquainted with a potential apprenticeship student's work habits, skills, overall abilities, etc. As apprenticeship training is expensive and time consuming, most business and industry using this technique feel that appropriate investigation into a potential student's background and work ethics is at a minimum necessary to ensure a sound human resource investment.

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[13]. Government Limitations on training innovations. A construction industry cost effectiveness project report. Report D-2. Business Roundtable, (New York, NY: March, 1982), 1-15.

Participation by Organized Labor

In addition to industry, american apprenticeship has typically involved organized labor. American apprenticeship today is largely an extension of collective bargaining.[14] Apprenticeship satisfies some very important union objectives, the most important being the ability to control craft competence and productivity. Secondly, from a collective bargaining perspective, issues include job security and corporate/union investments in job skills development. Union participation in apprenticeship is also a form of union security. By controlling the kind of training, degree of specificity, and numbers of trainees, unions maximize their ability to attract and maintain organized contracts and keep their members versatile and adaptable to work changes. It also serves to prevent substitution of low-wage workers for journeyman members.[15] The International Union of Operating Engineers sponsors technical skills training for newly recruited workers, and often combines related training activities in cooperation with the local area's post-secondary educational institutions. In the ship construction industry on the west coast of this country, the trades unions representing ship construction workers (International Association of Machinists and Tool and Die Makers, International Brotherhood

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[14]. John R. MacKenzie. Education and training in labor unions, 1982 Report, (Washington, D.C.: Department of Health, Education and Welfare, 1983).

[15]. International union of operating engineers. Dual enrollment as an operating engineer apprentice and an associate degree candidate. Final Report. (Washington, D.C.: International Union of Operating Engineers, December, 1975).

of Electrical Workers, etc.) cooperate with the commercial ship repair firms, in a combined union-industry sponsored entry-level trades worker apprenticeship program.[16] A small portion of the wage paid by the student-worker, matched by both employer and union supports the training program. Time away from the job for related school in an area community college is also a program component.

The Role of Community Colleges

The community college has assumed a prominent role in apprenticeship training through apprentice-related classroom training.[17] Linkage issues affecting increased participation of community colleges in apprentice programs have been found to include granting college credits for apprentice on-the-job training towards an associate degree; employer willingness to fund community college credit for OJT, and willingness to allow time away from work for attendance at related training. Programs which have been identified as successfully operating include the U.S. Navy's Maritime Skills Trades apprenticeship program which operates through linkages to eight community colleges serving the U.S. Navy's shipyards nationwide.[18] [19] Several very successful programs

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[16]. Jeffrey A. Cantor. Multi-shipyard cooperative training: A report on the state-of-the-art. Journal of Ship Production, I, (3), 1985, 184-191.

[17]. Jeffrey A. Cantor. Apprentice program and community-technical college linkages: A model for success. Presentation to the Annual Conference of the Eastern Educational Research Association, Miami, Florida, February 1988.

[18]. Jeffrey A. Cantor. "JTPA supports the shipbuilding industry," Journal of Studies in Technical Careers, VII, (3), 1985, 205-213.

which were reviewed included Long Beach City College and New Hampshire Vocational Technical College. Both provide related classroom training and credit for the on-the-job portion of the apprenticeship.

Professional Association Sponsored Apprenticeships

The Maryland Electrical Contractor's Association has also been very successful in operating a registered apprenticeship program in cooperation with Harford (Maryland) Community College. This program prepares entry-level trades workers in the building construction and electrical trades. College credit for the on-the-job portion of the curriculum, as well as for the coursework taken within the college is a positive program component. Likewise, The National Automobile Dealer's Association has developed a national curriculum for automotive service technicians, which include both OJT and related-training through participating community colleges. Exemplary community college linkages with area automotive trade associations for registered apprenticeships include Harford (Maryland) Community College and Daytona Beach (Florida) Community College. While issues of registered apprentice participation (often due to program length and a resistance on the part of the automotive dealers to control hiring in order to protect apprentice wages) continue to hamper many of these programs, overall success has been realized in these programs.

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[19]. Jeffrey A. Cantor. "The job training act and shipbuilding: A model partnership," Personnel Journal, June, 1986, 118-125.

Federal, State and Local Governments Participate Also

Renewed interest has developed in state and local government registered apprenticeship programs as a result of attempts to make maximum use of local resources to develop a trained public work force. This is perhaps one of the most promising areas for use of registered apprenticeships in workforce training. European governments have used apprenticeships extensively for training government and municipal workers. Within the United States, the city of Boston has employed the apprenticeship for training both police and fire workers. In the state of Maryland, a unique arrangement between the University of Maryland, Maryland State Police and Montgomery County Public Schools has provided training for public service employees. The federal government is currently using the apprenticeship to train clerical workers in The Office of Personnel Management in Washington, D.C. The U.S. Navy's apprenticeship training program for skilled-trades workers is the oldest documented, continuously operating apprenticeship program. Linkages exist with local community colleges, nationwide, for both related classroom and on-the-job training credits.

Public Schools and Apprenticeship

School to apprenticeship programs enable high school students to work part-time while attending their senior year. Upon graduation these students then enter into the registered apprenticeship. These programs motivate students "at-risk" of dropping out of school to complete their high school education.

They also provide financially poor students meaningful and necessary part-time work. The "Boston Compact," is a pre-apprenticeship arrangement with area secondary schools and participating business. This program was modeled after some of the strengths of the German apprenticeship programs. This program further highlights a potentially successful marriage of Perkins' monies with apprenticeships.

Special Populations Can Be Served

Apprenticeship program participation has also included other non-traditionally organizations, many serving non-traditional populations. Among these have been Native American populations on indian reservations, prisoners in correctional institutions (often to alleviate overcrowding), Job Corps participants (some often not eligible for other kinds of programs), and the handicapped (as a mechanism to promote mainstreaming and client self-sufficiency). These various public organizational constituencies (prisons, indian reservations, state and local governments, and community service agencies,) have often linked private monies with federal and state monies (Perkins, JTPA, and Education for All Handicapped, P.L. 94-142) to effect these linkages.[20] Other funding to promote these types of apprenticeship programs have come from community and private sources such as Marriott Corporation and the Sears Foundation. Many of these programs have outcomes that serve as a

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[20]. Jeffrey A. Cantor. Exemplary practices linking economic development and job training. Presentation to the Educational Management Division, Eastern Educational Research Association, Savannah, GA, February, 1989.

model of America's best community service efforts, promoting our nation's attempts to maintain a lead in world economic competition.

Job Corps and The Apprenticeship

Apprenticeships for job corps participants who do not meet the usual minimum requirements for apprenticeship have been arranged by BAT staff, labor organizations and apprenticeship program sponsors. Job corps participants are provided with basic and remedial skills education, often leading to a high school diploma in preparation for entry into apprenticeship training. One site reviewed was the GTE Government Services facility in Cherry Hill, New Jersey.

JTPA Linkages Through Apprenticeship

JTPA funding plays a potentially important role in linking registered apprentice-training with state and local business development initiatives. Under its Economic Development-JTPA Linkage study,[21] various ways in which JTPA funding has been used were identified. JTPA funding has been successfully used in Pennsylvania (at the Chester County Partnership for Economic Development) to sponsor apprenticeship programs.

Apprenticeships Involving Native American Programs. Apprenticeship programs for Native Americans have also been successfully operated in diverse operations. Linkage issues

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[21]. Jeffrey A. Cantor. Interorganizational Partnerships in Local Job Creation and Job Training Efforts: Six Case Studies. Final Report prepared for the U.S. Department of Labor, Employment and Training Administration, under Contract No. 99-8-4700-75-064-01. Cosmos Corporation, Washington, D.C., 1989 (with R.K. Yin, P.G. Bateman, R. Vaughan, S. Lande, and D. Dain).

relating to apprenticeship program availability for Native Americans and ratios of these applicants to available positions were studied. Identified issues included the availability of related instruction (e.g., accessibility to community colleges, and basic and remedial education), and post-apprenticeship job placement and retention off of the reservation. Two programs reviewed were the Windriver Reservation in Wyoming and reservations in the Phoenix, Arizona area. Funding which has been used to sponsor these programs includes the JTPA monies as well as other targeted Native American federal funding.

Dislocated Workers Assisted through Apprenticeship. Apprentice programs are designed to return dislocated workers to meaningful employment (usually in occupations related to their past work experience and skills), and involve close coordination between state and federal DOL staff to properly identify dislocated worker populations and to put programs into place early enough to avoid extensive layoffs. JTPA funding has been used for this purpose. Two programs were reviewed in which these collaborations were found to be successful: one in Salt Lake City, Utah at the Dislocated Worker Center and one at the Volkswagen facility in Pittsburgh, Pennsylvania. Pennsylvania has developed extensive program outreach efforts to retrain dislocated workers.

Correctional Populations

Registered apprenticeship programs operate in many federal and state correctional institutions. With the new movement to private

contractor operation of correctional facilities, there has been renewed interest in sponsoring apprenticeship programs. The American Correctional Education Association has become very interested in correctional registered apprenticeships and inmate vocational training. Linkage issues include relationship between apprenticeship program length and term of prison sentence, availability of related classroom training within the correctional facility, willingness of employers to participate with inmates and corrections officials, and the image of state and local governments spending time and money on training of inmates. Reviews of state correctional programs in Tennessee and Pennsylvania were made.

Findings and Conclusions

This study reviewed operating apprenticeship programs and identified facilitators and barriers to effective linkages of business and industry with education and other training programs with apprenticeship programs, thus finding out what works best in our free economic society, and identifying barriers which might be eliminated through policy changes. An identification of concerns, issues, and barriers needing to be addressed or overcome in expanding the linkages or in implementing new linkages was made. Alternatives or options were also indicated for consideration which might influence state and federal policy recommendations and/or intervention strategies.

What Has Been Found

Issues and Barriers. The ultimate objective of this study

is to identify barriers and facilitators to effective linkages of secondary education and other training programs with registered apprenticeship programs; i.e., to find what works best in our free economic society, and to identify barriers which might be eliminated through policy changes. The findings, which support much of what was described in a report issued by the National Center for Research and Vocational Education[22] indicates that American apprenticeship reflects certain strengths and weaknesses, including the following characteristics:

- Variable quality of training offered. The quality of training offered in apprenticeship is highly variable across trades and localities. At one extreme, some U.S. apprenticeship programs rank among the best occupational training programs in the world, offering broad, well-rounded training in all aspects of the craft. Others are underfinanced, semi-structured, or rigidly tradition-bound with obsolete curricula.

- Inadequacies in administration of apprenticeship. As a voluntary partnership between labor and management, between private industry and public agencies, between departments of labor and departments of education or vocational education or between the federal government and the states, apprenticeship often exists without clear leadership, or without pride of ownership. This difference is apparent when reviewing apprenticeship program

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[22]. Robert W. Glover. Apprenticeship Lessons From Abroad, Center for the Study of Human Resources, University of Texas at Austin, (Columbus Ohio: Ohio State University, National Center for Research in Vocational Education, 1986).

operating as part of a business or industry, versus a program operating in conjunction--or outside of a business or industry.

- Inadequate numbers trained. American apprenticeship opportunities tend to produce inadequate numbers of skilled workers. This results in part from fluctuations in labor market conditions, the high costs of apprenticeship and the lack of financial incentives for employers.

- Concerns about the cost-effectiveness of apprenticeship. Apprenticeship training is perceived by many employers to be an expensive proposition that does not pay off. This may be one of the underlying causes of the alleged inadequacies in the number of personnel trained through apprenticeship.

- Inadequate financing for certain apprenticeship programs. During periods of prosperity certain apprenticeship programs in the U.S. are well financed, especially some of the programs that are jointly administered by employers and unions. However, recessions adversely affect funding for most apprenticeship programs, and numerous programs are simply underfinanced all of the time. Funding from vocational education and other public sources varies considerably from state to state and over time. Yet apprenticeship advocates in the private sector are reluctant to endorse expanded public financing of apprenticeship, fearing that increased public control of apprenticeship will accompany the funding.

- Limited access to apprenticeship. Effective equity in access to apprenticeship has been a problem in the U.S. As profit

maximizes, employers tend to hire those whom they perceive to be the fastest learners or those who will best fit the jobs. While most sponsors of apprenticeship see apprenticeship training as a regular cost of doing business, few include remedial training as a normal part of industry responsibilities. This viewpoint can lead to exclusion of the disadvantaged, handicapped, young or aged, or otherwise non-traditional opportunities - the target populations for the U.S. labor pool per Workforce 2000.

- Unclear role and relationship to other training.

Because the role of apprenticeship in the American "nonsystem" of training is ambiguous, its relationship to other training has been obscured and left to chance and local circumstances. For example, it is not clear what role, if any, apprenticeship should play in providing a remedy to teenage unemployment.

Barriers to Linkage. Thomas[23] identified certain barriers persistent in a cross-section of Florida business and industry that sponsored apprenticeships with secondary vocational education. Many of these were also found in our larger study including:

a. Budgeting problems for business, especially those working on a labor cost basis with their customers;

b. Organizational problems, including long-range planning which often precluded the sponsoring of an apprentice unless planned into the operational budget well in advance;

c. Company operating procedures which often do not provide for apprentice labor;

d. Legal semantics and interpersonal problems between

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[23]. Thomas, 1982.

vocational education, local and state governments and the firm or business;

e. Actual program preparation and implementation inertia;

f. Pay differentials between apprentices and the non-apprentice entry-level counterparts which cause difficulties in keeping apprentices satisfied and attracting apprentices willing to indenture themselves for a fixed period of time;

g. Program length, which becomes prohibitive to both business and the apprentice;

h. School credit for on-the-job apprenticeships, which costs the employer money not directly related to the job training;

i. Selection of apprentices, which often reflects favoritism; and

j. Quality of instruction.

Facilitators to Linkage. The study also identified circumstances which acted to promote successful linkages between secondary vocational education and apprenticeships, many of which were present in Thomas' earlier study. Among the beneficial aspects are the following factors:

a. A common basis for exchange, which might be an occupational craft committee serving a school or community college program;

b. Mutual benefits to be derived for both the school and the business or industry;

c. Mutual awareness of the program's goals and the expectations of the apprenticeship program;

d. Mutual respect, confidence, and trust of all parties concerned;

e. Access to facilities, students, instructors, and funding;

f. Planned and structured communication throughout the program;

g. Similarity of attributes, goals, and values of the vocational program and the business or industry;

h. Opportunity to participate and benefit;

i. Incentive to participate; and

j. Key people on both sides dedicated to the program's success.

In Conclusion

It is clear that apprenticeship as a form of formal structured workplace training is a most viable solution to the manpower needs of American business and industry. However, in order to promote apprenticeship, a better understanding of the process through information dissemination including the viability, workability, and business benefits to be derived through apprenticeship linkages to educational institutions is necessary. Employers need to have access to the kinds of information which can adequately show them what can be done through interorganizational cooperation. Business leadership needs to see and understand the benefits to their own business goals through manpower development achieved through apprenticeship program sponsorship. Employers will need to see how they can establish a common basis for exchange and they need to see and understand the benefits derived through interorganizational cooperation. This can happen through better outreach on the part of educational institutions acting as a catalyst for such mutual program design and development.

Mutual cooperation among business and education will inevitably lead to increased resources available for apprenticeship

training through shared facilities, instructors and funding opportunities. We have been very impressed with the degree to which this happens when both business and educational leadership begin to see the mutual benefits which can be derived from a sharing of manpower development responsibilities.

As we have seen through our program evaluations, the best outcomes in terms of apprenticeship program development happen when there is a mutual respect, confidence, and trust of all parties concerned, including business, government and educational program leadership.

Ultimate success is totally dependent on an open line of communication between all parties; a sharing of needs, ideas, and resource opportunities, with key people on both sides dedicated to the program's success. When program design includes a planned and structured communication throughout the program, with ample opportunities for participation and organizational benefits, most programs will succeed.